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JUNIOR HIGH SCHOOL

CURRICULUM GUIDE

For

Agriculture

Grade IX

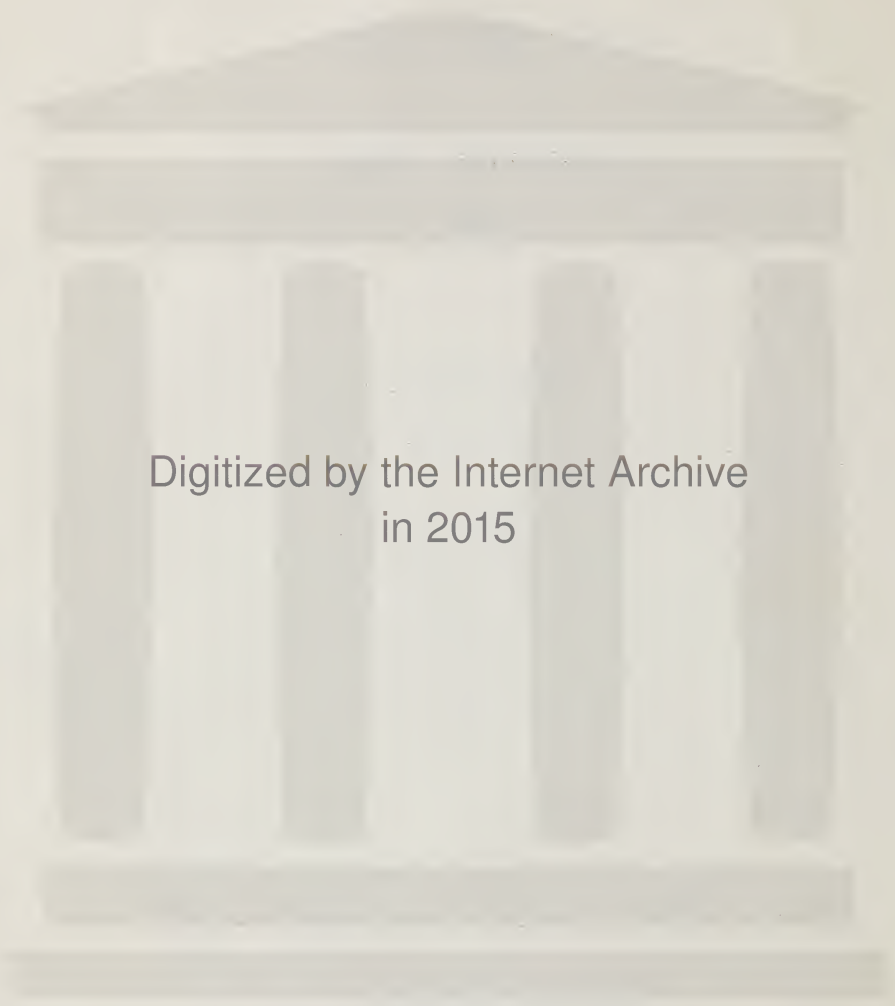
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AGRICULTURE, GRADE 1X

Introduction

Beginning with September of 1952, the Department of Education will offer a two-to-four periods per week Grade 1X option in Agriculture. This course is designed as an alternative to one of the existing Grade 1X options. The peculiar nature of this learning area demands a considerable background of appreciation, experience, and training in Agriculture. However, for the academic 1952-53 year the Department will consider recommendations from superintendents for the establishment of this Grade 1X Agriculture option in schools where the teacher is believed to possess something near to but not quite the necessary qualifications and where the school and home equipment warrants an expectation that practical work will be carried out successfully.

Philosophy

Since agricultural science is founded upon and applies the findings of many other sciences, it seems wise to consider agricultural science as a blending of these contributing sciences, and to deal with all related sciences at one and the same time. This treatment should facilitate better understandings and lead toward a fuller and richer life. By approaching life problems through the scientific method the student should be able to view matters in a realistic fashion. This avenue could be through a series of related supervised agricultural activities conducted at home, unless school facilities are superior. The scope of agriculture presents a wealth of opportunities for such undertakings.

In the community boys and girls have experiences and make discoveries. The vitalized classroom situation will serve as a clearing house for dealing with these experiences and discoveries. In areas where farming is the main way of life, many experiences and problems facing boys and girls are associated with agriculture on family, community, provincial, or even global bases. In urban communities boys and girls are brought continually into direct associations with varied aspects of horticulture; these associations should be made meaningful through educational uses. Much can be gained by students having increased opportunities to deal with agriculture problems related to the various Grade 1X General Science units. This will not only promote achievement of the objectives of the General Science course; it will enhance the development of a well-balanced science outlook and experience.

Points of Philosophy

1. Place of agriculture in our way of life -- utilitarian and aesthetic aspects - our dependence upon agriculture for our foods, clothing, homes, media of exchange, attractiveness of home, community, and more distant recreational areas.
2. A practical course, applying scientific knowledge acquired, and gaining experiences in a wide variety of activities which involve reasoning and problem solving. Formal lecturing or "telling" should be restricted to an absolute minimum. Pupils should learn by doing.
3. Ample opportunity should be provided for individual pupil differences, a wide variety of experiences, and the discovery, exploration and further pursuits of special interests and abilities. These may form a basis for a desire for further study in these and related areas (Guidance aspect).

4. The teacher should familiarize himself thoroughly with the domestic and other local conditions pertinent to the course. Thence, it will be easier to select course content which will best meet the needs, interests, and abilities of the pupils and their locale. The scope of Agriculture provides ample opportunities for this.
5. The teacher should enlist the interest and co-operation of parents through the medium of a "pupil-project program-at-home". Interests may become common to pupil and parent. It should not be unusual to see parents and pupils working together on problems of mutual interest.
6. This option in Agriculture is designed for both rural and urban pupils.

Objectives

Over and above the objectives set forth as valid in General Science, the course in Agriculture should have as a peculiar aim the understanding and appreciation of Agriculture and its significance in our present daily lives; both theoretical and practical avenues of learning will make their contributions in this respect.

Organization of the course outline

The Grade IX option in Agriculture will not supersede the topics or treatment afforded the Agriculture units in the General Science course. Rather, this option is designed to expand and complement pupil experiences recommended in the Grade IX Science units. It is anticipated that this expansion may lean in some schools largely to Horticulture. For these schools a rather extensive outline in Horticulture, from which the teacher may choose areas most relevant to the local situation, is provided. In other schools this expansion may well be in the field of livestock; provision may be made for a more detailed outline of possible study in such an area. Wherever possible, it is strongly suggested that the activities set forth in this outline be very closely integrated with those suggested in the General Science units.

There are two main divisions of experiences provided for in this new option. These are organized respectively under Division A and Division B of this course outline.

Division A contains a series of learning activities in General Agriculture directly related to the existing Grade IX General Science units. Thus, in the outline of this Division the teacher will find learning activities associated with Unit 1, Unit 2, and so on of the Grade IX General Science course.

Division B contains a series of learning activities which deal more specifically with Horticulture. This Division is further sub-divided into sections respectively as follows: Section 1, Theory involved; Section 2, Areas for exploration and experience; Section 3, Suggested activities in the different areas. A detailed outline of these sections and areas will be found on pages 10 - 19.

Practical Major Activities in Agriculture

Along with activities already suggested in this option outline or in the General Science units dealing with Agriculture, it is suggested that students be encouraged to carry out a program of practical activities at home and under the supervision of the teacher and the class. These projects preferably would be integrated in the cases of individual students; one activity could be drawn from the animal area, one from the plant area, with the remainder chosen from related

areas. Choices should depend largely upon individual student interests, available facilities, and local problems. Each student should be expected to undertake and carry through at least one practical activity during the year. The classroom activities should be closely integrated with the students' practical activities. Some suggested individual and class activities are:

Animal Husbandry:

1. Participation in a calf, beef, pig, or dairy club.
2. A poultry project.

Plant Husbandry:

1. Participation in a grain or similar club.
2. A vegetable or flower or landscaping project.

Group Activities:

1. Field excursions to particular farms, a creamery, an implement dealer, construction of particular sorts of educational interest.
2. Landscaping and improvement of school buildings and grounds.

THE TEACHER MUST REALIZE THAT THE AREAS AND ACTIVITIES IN THIS OUTLINE ARE SUGGESTIVE; IT WILL BE IMPOSSIBLE TO COVER ALL THE MATERIALS CONTAINED IN THESE PAGES.

It is not intended that all pupils be required to cover all the areas and suggested activities in complete detail during any one year. Undoubtedly some students will be able to cover more of the areas and in greater detail than others. Local conditions may place distinct limitations on the range of areas and activities. Their selection and the relative intensity with which they are to be covered should be determined by local conditions, individual pupil interests, needs and abilities. The teacher should provide the pupil with an opportunity for a wide variety of experiences and assist him in discovering and further pursuing special interests in the broad fields of plant and animal life and their use for human satisfaction. This course is rich in opportunities for such service.

Materials and equipment:

The teacher should make a study of the materials and equipment which would be required for the various activities. Thence on the basis of local conditions and concomitantly of the type of course he is going to conduct he should arrange to have these materials on hand for such a time as they are required.

Division A material requirements are implied in the activities suggested.

Division B materials and equipment requirements are outlined below:

1. Greenhouse, workroom, or laboratory. Suitable plans are available from the Department of Education, or a knocked-down structure complete with cypress wood, glass and hardware may be obtained from an Ontario firm. In either case Departmental advice should be closely followed to avoid overlooking important features.

2. Gardens. Sizes to be determined by type of course content, local conditions (e. g. facilities at home and/or at school). Vegetable and fruit areas should be confined to home gardens, while landscaping, display borders and beds, cutting areas and trial areas may be either at home or at school.
3. Hotbeds and coldframes.
4. Tools for general or group use.
5. Tools and equipment for individual pupils in sets, to be used in laboratory:
 - a. Soil-mixing, sieves, tampers, packers, seed-starting boxes, flats, dibblers, markers, etc., all of which may be made in school shop.
 - b. Trowels, cultivators, penknives, etc., which must be purchased.
6. Plant materials for foundation stock from:
 - a. Donations from parents, etc. (a very good source).
 - b. Purchases from local commercial firms.
 - c. Seeds and other reproductive forms purchased from distant sources.
7. Home facilities - The teacher should make every effort to utilize community and home facilities which would complement those available in the school.

Planning for instruction

Each and every course of study should be based upon needs, interests and abilities. The main purpose of this outline is to supply the teacher with a reservoir of suggestions which would assist him in keeping the teaching-learning process on a high level of interest through a broad range of vivid activities and timely materials. Therefore the following steps are suggested as a guide for the teacher in using this outline:

1. Make a study of the local needs and conditions which will assist you in determining the course content.
2. Study the objectives as outlined in General Science and in the course and add others which you may find advisable and pertinent to your conditions.
3. Consult with your superintendent or principal regarding the credit value of the course which you are planning to conduct.
4. Check the content of the outlines on the following pages in terms of local conditions and make necessary deletions, alterations, and additions.
5. Study the lists of suggested activities, determining which ones are to be used and adding new ones according to your conditions.
6. Make the necessary changes according to time available for the course. Not only must the total time allowance for the year be decided, but the distribution of this time must be made. The Department of Education does not expect the teacher to restrict the Agriculture option to single timetable periods equally

spaced through the week. It will be quite in order to have double or longer periods on a less frequent basis. In line with the established principle of having courses extend over shorter periods than the academic year, in the case of the Agriculture option it may be better to emphasize practical work during the fall and late spring months with a lessened emphasis upon this option during the winter months. The seasonal situations and the nature of the work being done at any one time should govern the time allotments.

7. Check these activities against the related units of the Grade IX Science course. Then make a time schedule plan for the Science units so as to facilitate an optimum of timely integration of both courses.
8. Check the list of references in the library and consult the Appendix for any supplementary publications which will be especially useful in teaching the various units and areas.
9. Procure all student and teacher references needed before the opening of school. Assemble these according to areas so that they may be readily available when needed for class use.
10. Procure all specimen and other real materials before school opens. Classify and arrange them in the storeroom.
11. Prepare a list of teaching situations in the community to be used for major enterprises and field classes.

Methods and procedures

- a. Primary and secondary references. This course is not intended to be a textbook course, and under no circumstances should it be permitted to be one. A library of suitable reference books, pamphlets, press releases, and periodicals should be available to the pupils. The learner should learn how, where, and when to obtain relevant information and then how to use it. A list of available references will be supplied in the Appendix.
- b. The information acquired should be of a practical and permanent nature and value. Encourage students to keep a good notebook including plans, cultural practices, work calendars, etc. This notebook should be of a good quality loose-leaf type.
- c. Procedures. Formal lecturing or "telling" should be minimal. On-the-job instruction, problem-solving, use of research, report and conference techniques are recommended. Field trips should be well planned and frequent. Each pupil should have some enterprises he may consider as his own personal responsibility and his to keep when completed; the sense of ownership is of psychological import.

Evaluation

1. Personal development: -- 20%
Plans and does work promptly and carefully.
Keeps self and equipment neatly.
Shows initiative and resourcefulness.
Is particular about spelling, punctuation, and clarity of written expression.
Co-operates with fellow-students and teacher.
Assists in maintaining a pleasant social atmosphere.
Talks quietly when communication is necessary.

2.	Factual knowledge: Daily work, tests, examinations.	--	40%
3.	Practical work: Based upon evaluation of individual practical activities	--	40%
			<hr/> 100% <hr/>

DIVISION A. AGRICULTURE

Associated with Unit 1.

1. Types of agricultural production on the home farm, in the local community, and in the province relative to plant and animal husbandry; an understanding of "farm types", and a development of farm classifications included in the community and province.
2. The place of the cereal grasses in the supply of man's food -- only plants can make food from soil, air, and water; kinds of cereals and their products produced or used on the farm and in the home; peculiar uses of wheat, oats, barley, corn, rye; other plants grown or used on the farm and in the home; flax, potatoes and other vegetables, fruits; deal with the functions of specific plant parts and their human uses, the relative extent of production on a community, soil or climatic zone, provincial and national scale of each kind of plant.
3. The place of animals in the supply of man's food, clothing, shelter, utensils, transportation, etc.; their contributions to the welfare and progress of the human race; the different kinds and breeds of animals significant to Alberta's agricultural economy.
4. The relative significance of the agricultural industry in the economic life of the community, the province, and the nation; proportion of people engaged directly and indirectly in agricultural occupations, the dependence of other industries upon farm produce and values, values of primary and secondary agricultural products, purchasing power of farm folk most variable of any group.
5. Growth requirements of plants:
 - a. Climatic factors -- precipitation, evaporation rates, run-off, soil waters, temperatures (including relationships of latitude and altitude to temperatures), average frost-free periods, sunshine duration, prevailing winds and rates in growing seasons, climatic and soil zone maps, general and particular suitabilities of various Alberta regions (e. g. Medicine Hat, Olds, Lacombe, Consort, Edmonton, Peace River, Fort Vermilion).
 - b. Nutrient requirements of plants -- importance of osmosis to plants and animals; plant nutrients required for good crops, and sources; trace elements; what a good soil is; significance of colors, organic matter determinations, simple soil profiles, textures (simple tests), topographical influences, simple types, moisture-holding properties of different soils, available plant foods, minute soil inhabitants (myriads in a thimbleful) which always sit at the first table, soil zonation maps of Alberta and of Canada.

6. Growth requirements of animals:
 - a. Feeds-- nutrient requirements, forage, concentrates, trace-needs; pastures, significance of wasteland.
 - b. Available supply of good water - kinds and methods of procural.
 - c. Shelters essential to various kinds of animals; changes in practices.
 - d. Other care.
 - e. Availability of above essentials within local community, on home farm, etc.
7. Factors affecting the production of farm plants and animals:
 - a. Climatic - - drought, hail, wind, frost, wet seasons of growth or harvest in relation to availability and qualities of feeds; effects upon farm animals of storms, extremes and sudden changes in temperature, availability of suitable shelter.
 - b. Soils -- low moisture-retaining soils, water-logged soils, alkali soils (physiological drought), depletion of nutrients through leaching and erosion, structures.
 - c. Weeds -- collection for identification and classification of local weeds as to economic implications; competition of individual kinds of weeds for soil moisture, soil nutrients, sunlight, and economic losses thereby; comparative root systems; general and specific principles of control -- competitive crops, cultural, chemical.
 - d. Insects and insect-relatives - local plant and animal parasites, life histories leading to the general principles of pest control via stomach and respiratory poisons (paradichloricide, D. D. T., pyrethrum, chlordane, etc.), helpful insects and insect-relatives that we should know and protect.
 - e. Other invertebrate pests; liver flukes, stomach worms, etc.
 - f. Vertebrate pests; vertebrate friends working to our general benefit.
 - g. Availability and feeding values of coarse grains, roughage, pasture, water, availability of suitable shelter.
 - h. Available marketing facilities and their arrangements; community, provincial, national, in terms of each commodity offered for sale; co-operatives, local stockyards create competitive prices (vs. direct-to-plant shipping) etc.
 - i. Availability of suitable labor, mechanical equipment, and power.
 - j. Why we produce: cereal, forage, seed, vegetable, canning, fruit, dairy, poultry, and livestock crops.
8. Man's requirements of plants and animals from
 - a. The buyer's point of view:
 - i. Who are the buyers of our various agricultural commodities?
 - ii. Qualities desired by the ultimate consumer.

- iii. Governmentally imposed standards designed to protect both seller and buyer; grain trade laws and regulations; live-stock, poultry, and dairy grading.
 - iv. Canadian Wheat Board, Wheat Pools, United Grain Growers, Alberta Poultry Marketing Service, Co-operative Wool-Growers' Association, Dairy Pools, and their contribu-tions.
 - v. Commercial middlemen, Line Elevator Association, Grain Exchange, and their contributions.
- b The producer's point of view:
- i. Field crops - significance of yield, earliness, shattering, straw-strength and weight, bushel-weight, resistance to fungal and animal pests (smuts, rusts, root-rots, rasp-berry mosaic or big-seed, hollow heart, scab, etc; wire-worms, wheat stem saw-"fly", fruit maggots, etc.), and varietal variations interesting in structure and in use to man (e.g. kohlrabi, cabbage, cauliflower, Brussels sprouts are all variations in one species of plants); com-parative root extensions in relation to weed competition.
 - ii. Livestock as machines converting plants into commodities consumed as human food; "type" -- an understanding of: cattle-- beef, dairy, dual purpose; hogs -- pork, processed forms; poultry -- meat, egg-producing; horses -- saddle, ranch, draft, meat; response to feed, weather, and other conditions.

Associated with Unit 2

- 1. Plants - understanding of "type", "variety", and "strain":
 - a. Early introduced varieties, their advantages and disadvantages.
 - b. Story of development and selection of presently recommended varie-ties, with emphasis upon the romance of breeding out character-istics sought for.
- 2. Animals - understanding of "type", "breed", and "strain":
 - a. Early introduced types and breeds in Alberta.
 - b. Present types and breeds in Alberta -- their particular character-istics and claims presented on their behalf.
- 3. Plants -- sustaining availability of plant foods in soil: techniques and management practices - selection of varieties, seed selection - what is good seed? germination tests - "quick", standard; seed judging; seed treatments, - old (disadvantages), new, importance; traditional and pre-sent-day approved methods of preparing good seed-beds; seeding-time (by moon, etc.), rates, depths; after-seeding culture; reducing competitive effects of weeds and animals.
- 4. Animals -- selection of breed and type; importance of selection of sire and dam on basis of a record of performance rather than upon individual characteristics only; feeds and simple feeding practices; housing; general care and management.

Associated with Unit 5

In this section, farm machinery should be frequently referred to and used when dealing with the various types and variations in machines. Farm children take for granted the machines used for the myriad of purposes in farm opera-tions, without having them used as educational media. In moving granaries, or

in rock-clearing, for example, what two classes of lever are involved in the crow-bar or pole-and-block or -rock? In the pump-handle? In the farm implement lever? In individual power transmission? In hydraulic lifts? etc.

This is a splendid opportunity to stress farm safety education. Tractor accidents are becoming more frequent. Less frequently a farm worker loses all or portions of a limb while around a buzz saw. Arms are mangled with belts or power-take-offs. Less spectacular manners of injuries account for much suffering and loss of time. Careful use of protective devices and heeding of warnings printed in many easily-seen places should be dwelt upon. Inventories of such accidents in the community or a census taken from newspapers over a definite period would emphasize the need for this type of education; discussions should point to specific potential causes of farm accidents and their prevention.

DIVISION B. HORTICULTURE

Organization of the Course Outline

The outline is organized to include all the major areas of Horticulture, i. e., vegetable gardening, house and greenhouse plant-growing, fruit and landscape gardening. The outline falls into three main sections as follows:

Section 1 includes an outline of the theory and knowledge which the pupils should acquire through experiences and on-the-job instruction. Its main purpose is to serve as a guide to the teacher regarding the nature of the subject matter to be included in the course. It is not intended to serve as a topical outline of headings to a series of formal lectures to be given by the teacher.

Section 2 includes an outline of the areas to be considered and through the media of which students may obtain experiences which would enable them to acquire a knowledge of the theory outlined in Section 1. These areas are as follows:

- | | |
|--------|--------------------------------------|
| Area 1 | Tools, equipment and other materials |
| Area 2 | Growing media |
| Area 3 | House plants |
| Area 4 | Greenhouse culture of plants |
| Area 5 | Vegetable gardening |
| Area 6 | Fruit growing |
| Area 7 | Landscape gardening |

Each area is broken down into sections which in chronological order give the various topics to be considered pertinent to that area.

Section 3 contains a suggested list of activities through the performance of which, when closely integrated with on-the-job instruction, the pupils may obtain experience in the various phases of the areas outlined in Section 2. These in turn would facilitate acquiring knowledge of the theory outlined in Section 1.

This section may well serve as a guide to teachers in planning the program of activities for each month.

Since any practical and meaningful course in Horticulture involves activities which are seasonal in nature, being determined by the factors affecting plant growth, the suggested activities are grouped into "month periods". Under the outline of the month will be found a list of activities which are pertinent to that month. Thus during the month of January pupils should be participating in some of the activities suggested and outlined for the month of January.

The outline for each month is further divided into the respective areas which are listed in Section 2. Under each area will be found a list of suggested activities pertinent to that respective area. Thus, a pupil working with the "Landscape Gardening" area (Number 7 in the outline) should be participating in

activities which are suggested under "January" and "No.7 ---- Landscaping" of Section 2.

The outline of activities in this section is suggestive only. Alterations and modifications should be made according to pupil interests and local conditions.

It is further recommended that where possible throughout the course in Horticulture the practical work and theory should be very closely integrated with the Science courses.

Tentative outline of subject matter to be covered:

Comment: It is suggested that much of the context of this outline can and should be very closely integrated with the Science courses. This is particularly true of the sections marked with an asterisk in this outline. (*)

Section 1

Suggestion: Most of the material of this section can and should be closely integrated with the Science courses.

A. Horticulture and its significance:

1. Scope and definitions *
2. Contributions of Horticulture
3. The place of Horticulture in our agriculture
4. The work of the horticulturist

B. Plant structure and growth *

1. Cells, cell division, increase in size, differentiation
2. Plant tissues and organs
3. Roots, types, structure, functioning
4. Stems: types, structures, functioning, callus tissue
5. Buds: growth, flower, leaf, adventitious (purpose)
6. Leaves: types, structure, processes
7. Specialized buds and stems: bulbs, corms, crowns, rhizomes, tubers, offsets, runners, stolons, tuberizing and stooling
8. Flower: function, structure, flowering habits, pollinations, etc.
9. Fruit and fruiting habits: berries, capsules, drupes, pomes, legumes, grains, nuts, etc.
10. Seed-structure, function, types, after-ripening period, termination, periodicity

C. Classification of Plants

1. Agricultural classification, based on uses and parts of plants used.
2. Horticultural classification, based on growth characteristics.
 - a. Annuals, biennials, perennials; herbaceous and woody; trees, shrubs and vines.
 - b. Distinguishing between fruits, vegetables and ornamentals.
 - c. Seminally and vegetatively propagated plants.

D Climatic factors affecting plant growth *

1. Temperature a limiting factor
its effects on plant growth
minimum, maximum and optimum temperatures
rest periods
growing season, Alberta zonation
adjustments to temperature conditions
selection of type and variety
2. Water as a limiting factor *
role of water
precipitation, cultivation, etc.
crop adaptation
irrigation, indoor and outdoor methods, plant spacing
atmospheric humidity
soil moisture factors
symptoms of water surpluses and deficiencies
3. Light as a limiting factor *
general effects of light on plant growth
etiolation and blanching
light requirements of various plants, artificial lighting

E. Plant Nutrients

1. Major nutrient elements required
2. Trace elements
3. Requirements of balance of nutrient availability
4. Fertilizers and their application
5. Growth promoting substances: colchicine, auxan, etc.,
Vitamin B₁
6. Hydroponics (soilless culture)

F. Growth and fruitfulness

external and internal conditions favoring vegetative growth
factors favoring reproduction

G. Training and pruning horticultural plants

purpose, principles, methods

H. Propagation *

1. Seminal or seed
2. Vegetative
separation
division
cuttings: root, stem, leaves, etc.
layering: simple, serpentine, mound, air
graftage, budding
grafting: whip, cleft, bridge

I. Local insect pests and plant injuries *

identification, control and remedies

Local weeds: identification of common weeds, seeds, and seedlings;
control, manual and chemical

- J. Local plant diseases: identification, control and remedies
- K. Culture of annuals suited to locality or horticultural zone:
seeding time, rates, depth and methods
transplanting, repotting, hardening off, cultivation, fertilization
styles, fads, fancies, novelties
- L. Culture of biennials, herbaceous perennials and "bulbs"
- M. Culture of woody perennials

Section 2

Introduction

Section 2 includes suggested areas through the media of which pupils may gain practical experiences relative to the topics outlined in Section 1. The areas selected should be determined by pupil needs and interests, local conditions.

- 1. Tools and equipment:
 - a. Study of types of tools and equipment available
 - b. Selection, use, care and maintenance of these
 - c. Study of the main features involved in greenhouse construction, operation, care and maintenance. Practical experience relative to these when visits to local establishments are practical.
 - d. Hotbeds and cold frames: construction and management
 - e. Root cellars and basement storage facilities: principles of construction, plans, management
- 2. Growing media:
 - a. Soil: its characteristics re clay, silt, sand, minerals, air, moisture, organic matter
Organic matter used: manures, peat moss, (sphagnum and sedge)
leaf mold
Sand
Vermiculite
Krilium (C. I. L. "Loxar", etc.)
 - b. "Soil" conditions desirable for:
 - 1. Starting seeds
 - 2. Plant growth -- reference to special plant adaptations
 - c. Preparation of soils suitable for:
 - 1. Vegetable gardens and other garden areas
 - 2. Flower beds, etc.
 - 3. Indoor culture
 - compost pile
 - a suitable mixture for seed starting
 - potting and planting mixtures
 - d. Sterilization of soils
 - e. Simple soil testing
 - f. Fertilizers and their application
- 3. House plants
 - a. Benefits derived from growing house plants
 - b. Fundamental requirements and making adjustments to meet these,
 - i. e., light, temperature, ventilation, humidity
 - c. Displaying plants

- d. Soil: requirements of a good soil, making suitable soil mixtures, sterilization
 - e. Potting, shifting and repotting: time, pots to use, methods
 - f. Watering
 - g. Fertilization
 - h. Rest periods
 - i. Training and pruning
 - j. Propagation, from seed and vegetatively. Use of growth-promoting substitutes
 - k. Troublesome insects: identification and control
 - l. Individual plants: identification and culture of individual kinds of plants
 - m. Hydroponics: soilless culture of plants in the home.
4. Greenhouse culture of plants (where greenhouse facilities available)
This area could be very closely integrated with area 3 (Houseplants) since in many schools most house plants will be grown in the greenhouse.
- a. Study of elements of greenhouse construction, noting the special problems involved.
 - b. Fundamental requirements for plant growth and the methods of controlling the greenhouse environment
 - c. Visits to local establishments
 - d. Planning the greenhouse layout of benches, plantations according to plant adaptations. Planting and cultural calendar.
 - e. Planning material and soil requirements for the season, obtaining and storing
 - f. Greenhouse pot and bench culture of flowers, fruit and vegetables, involving experiences in: soil preparation, seed treatments, sowing, transplanting into flats, thence to pots or benches, watering techniques, training and pruning, vegetative propagation of various plants, flower cutting and processing, displaying, making of bouquets and corsages.
 - g. Pests and weeds: identification, sprays and spraying, i. e., aphid scale, white fly, red spider, mealy bugs.
 - h. Pupils: identify and learn culture of individual plants. Start and care for a number of "take-home" plants. Other group enterprises could be conducted, their nature to be determined by local conditions and the needs and interests of the pupils.
5. Vegetable gardening
- a. Origins, parts of plants used, their place in the diet.
 - b. Garden site, location, size and shelter.
 - c. Soil requirements and preparation.
 - d. Making the garden plan: Plant adaptations, rotations, arrangements planting table.
 - e. Variety selection: based on adaptations and "Recommended varieties"
 - f. Ordering seed stock: determining seed requirements, studying catalogs, making the orders.
 - g. Germination tests of old seed stock.
 - h. Seed treatment
 - i. Starting plants indoors or under glass; starting seed, construction of hotbed and its management. Cold frame and its management.
 - j. Seeding outdoors and transplanting from cold frame.
 - k. Irrigation and cultivation for weed control, etc.
 - l. Thinning.
 - m. Special cultural practices, i. e., blanching, staking, etc.
 - n. Harvesting, processing, storage: root cellar and basement.

- o. Pests and diseases: identification and control.
Consideration of culture of various crops: perennials, bulb crops, salad crops, cole and root crops, legumes, vegetables and vegetable fruits, potatoes and corn.
Supervised individual vegetable garden projects.

6.

Small fruit

- a. Relative significance and possibilities.
- b. Visit to local fruit plantation.
- c. Basic requirements: soil, shelter, etc.
- d. Cultural practices and management, involving:
kind and varietal selection, ordering stock, pre-planting care, planting, summer and winter care, propagation, etc.

The type of plantation to be started shall be determined by a consideration of the local factors.

7.

Landscaping

- a. Trees, shrubs and woody climbers, shelterbelts
 - 1. Identification of native trees and shrubs.
 - 2. Specimen trees recommended for landscape.
 - 3. Ornamental shrubs and climbers recommended.
 - 4. Selection of these for the landscape.
 - 5. Starting and care of the plantation:
obtaining stock, soil preparation, planting, summer care, pruning, winter care, weed control.
 - 6. Graftage.
 - 7. Shelter.
- b. Annual flowers for the garden
 - 1. Study of border arrangements; identification of flowers re size, flowering periods (succession throughout season) color arrangement, etc.
 - 2. Making the border plan.
 - 3. Study of the recommended types and varieties.
 - 4. Ordering seed stock, determining plant and seed requirements, study of catalogs, making out the order.
 - 5. Seeding timetable.
 - 6. Seeding: suitable soil mixture, seeding methods, after care.
 - 7. Transplanting to flats, watering, pinching, hardening off.
 - 8. Obtaining plants from commercial growers.
 - 9. Setting out into beds, subsequent irrigation and cultivation.
 - 10. Cutting plants for household use, prolonging bloom.
 - 11. Fertilization.
 - 12. Insect control.
 - 13. Winter preparation.
- c. Herbaceous perennials for the garden
 - 1. Identification of perennial border plants.
 - 2. Study of arrangements of perennials re size, flowering habits, color arrangements.
 - 3. The place of perennials in the "border".
 - 4. Recommended perennials, their adaptations and selection.
 - 5. Making the perennial border plan.
 - 6. Starting the plantation: preparing the soil, obtaining stock, starting seeds, transplanting, propagation.
 - 7. Watering, summer and winter care.
 - 8. Insect pests and diseases.

- d. Lawns, their construction and care
 - 1. Construction
 - a. Drainage and grading.
 - b. Soil and soil preparation.
 - c. Selection of lawn grass to be used.
 - d. Seeding: time, rate, depth, method, after care.
 - e. Sodding and terracing.
 - 2. Care of the lawn
 - a. Top dressing: manures, commercial fertilizers, rich soil.
 - b. Mowing.
 - c. Rolling
 - d. Watering.
 - e. Weed control.
 - f. Winter preparation.
 - g. Renovating poor lawns.
 - h. Pests and diseases.
- e. The landscape project
 - 1. Consideration of landscape principles.
 - 2. Visits to landscaped areas.
 - 3. The significance of landscaping.
 - 4. Study of simple landscape designs.
 - 5. Making the landscape plan (preferably pertinent to student's own home area).
 - 6. Having consideration for the following:
 - a. Drainage.
 - b. Laying out drives and walks.
 - c. Placement of foundation stock, specimen trees, ornamental shrubs and hedges.
 - d. The lawn.
 - e. Annuals and herbaceous perennials.
 - 7. Making of the garden calendar and keeping a diary.

Section 3

Suggested activities are proposed for the months of September and January. It is hoped that this organization will encourage teachers to formulate similar plans for other months in which this option is taught:

September

- 1. Orientation

This is the month of maturing -- the first month of autumn. The teacher and class should take advantage of the opportunities to observe and study the effects of planning and planting. (Cf. Section 2 (3) in Horticulture)
- 2. Theory involved
 - a. Horticulture and its significance.
 - b. Plant structure and growth:
flower -- function, structure, flowering habits, pollination; fruit and fruiting habits.
 - c. Horticultural classification of plants.
 - d. Propagation - from seed;
- vegetatively: division, stem - and leaf - cuttings.
 - e. Growth requirements pertinent to indoor culture.
 - f. Landscaping principles.

3. Growing media
Identification of various growing media - Loam; sand; organic matter such as natural manures, leaf molds, sphagnum and other peats; vermiculite; krillium.
Preparing a general potting mixture.
4. Tools and equipment
Clean and oil spraying equipment before storing for winter; same for other tools.
Earthenware pots -- selection and uses.
Vegetable storage facilities and equipment -- root cellars, basements -- their construction and management.
5. House plants
Put winter hanging baskets into good order using:
sweet alyssum, wandering jew, Asparagus sprengeri, periwinkle, spiderwort, pink oxalis, etc.
Stem cuttings of geraniums, poinsettia, etc.
Leaf cuttings of African violet with and without colchicine.
Start bulbs of freesia, iris, and other Dutch bulbs (a few).
Plant tuber of anemone.
Start seeds of coleus.
Care of house plants.
6. Greenhouse
Pot plants (see house plants above).
Start seeds of cineraria, calendula, calceolaria for early spring bloom.
Start seeds of larkspur for February bloom in greenhouse.
Start other seeds -- stocks, snapdragons, annual lupin, Primula malacoides, schizanthus, alyssum, annual chrysanthemum, forget-me-not, margarites, Togates erecta marigold.
Vegetables -- radish, lettuce, onions, cauliflower, asparagus, and start some rhubarb under benches.
7. Vegetable gardens
Watch for neglected weeds.
Cover tender plants when night frosts threaten.
Harvest crops, selecting mature and sound stock for storage.
Store potatoes in conic piles in the field temporarily, to dry and toughen bark.
Set out new rhubarb plantation.
Pot some parsley and chives for house growing.
Clear garden of crop remains, digging a trench and burying or placing in pile to rot.
8. Fruit plantation
Plant a few seeds of orange, lemon, or grapefruit for growth in the greenhouse.
Harvest fruit from existing plantation in greenhouse.
9. Landscaping
 - a. Trees, shrubs, and woody climbers: identification, characteristics, and uses in landscaping.
Preparation of soil for spring plantings.
 - b. Annual flowers for the garden: identification of annuals used in landscaping.
Collect, process, and store seeds of cherished annuals and perennials.

Pot a few outdoor annuals for continued bloom inside -- i. e., salvia, aster, ageratum, petunia, etc.

Gladiolus corms - harvest as soon as plant foliage turns brown.

Water lilies to be saved and moved indoors. Lift geraniums from outside beds and pot indoors.

c. Perennials:

Identification, characteristics, and uses in landscaping.

Label old subdivided plants for future use; divide and transplant after middle of month (i. e. peonies, dahlias).

Stake late-blooming perennials to avoid damage by autumn winds and rains.

d. The landscape:

Consider landscape principles and significance of landscaping.

Visits to landscaped areas -- study color effects and combinations.

Study simple landscape designs - making border plans (formal and informal) i. e., narrow border along path or drive, perennial borders for shaded or moist areas, border for spring season display, border for continuous bloom.

January

1. Tools and equipment

Check and repair tools, overhaul lawn mower.

Itemize, select and order new tools and equipment required.

Check and repair hotbed sash.

Paint garden stakes and order new ones.

Construct or repair garden furniture.

Start garden diary and calendar.

2. Houseplants

a. Careful watching of temperature, watering.

b. Seed: tuberous-rooted begonias, Asparagus plumosus, Asparagus sprengerii, salvia, Jerusalem cherry, heliotrope, Primula obconica etc.

c. Bulbs: continue bringing into light and warmth bulbs potted in October and November. Start freesia and quick growing narcissi for Easter bloom.

d. Cuttings: start cuttings from geraniums lifted from garden in the fall, also coleus and stevia.

e. Tubers: plant ranunculus tubers.

f. Shifting, repotting pot plants as required.

3. Greenhouse culture (Type of plants grown would depend on temperatures maintained in the greenhouse.)

a. Careful control of temperature and watering.

b. Pot plants as outlined under "House plants" previously.

Seed cyclamen, petunias for pot plants in May.

c. Start annuals under glass for flowering in May or June: annual larkspur, sweet peas, calendula, gypsophila, stocks, lupins, schizanthus, poppies, scabiosa, snapdragons, candytuft, clarkia, nemesia, and others.

d. Start forcing hydrangia for Easter bloom.

e. Pot or bench a few gladioli.

4. Vegetable garden
 - a. Reference to garden books, and magazines.
 - b. Study new seed catalogs.
 - c. Consult Experimental Station reports for ratings of varieties.
 - d. Making the garden plan.
 - e. Start some rhubarb plants in cellar, even now.
5. Fruit Plantation
 - a. Make plans for the new plantation.
 - b. Selection of varieties.
 - c. Check mulching of old plantations.
6. Landscaping
 - a. Check trees for possible bark damage, girdling.
 - b. Check winter protection of protected shrubs and perennials.
 - c. Plan layout for the landscape areas, display beds and borders, cutting garden and trial garden.
 - d. Plan details of landscaping areas.
 - e. Order seed: study catalogs, select kinds and varieties, determine plant and seed requirements, order seed stock.
 - f. Start diary and work calendar.
 - g. Check stored dahlia tubers for mildew and shrivelling; also gladioli in storage.
 - h. Start long-season annuals from seed for bedding out, i. e. lobelia, pansy, dwarf dahlia, ageratum, etc.

GRADE IX AGRICULTURE

Section A.

References and Teaching Aids

Teachers' References:

- Hammonds, Carsie: "Teaching Agriculture", McGraw-Hill, 1950.
"Schools That Count in Rural Living", N. E. A., 1949.
"Reports on Agricultural Education", C. E. A., June 1951.
"Better Schools for Canadian Youth", C. E. A., September, 1951.

Reference Books:

General:

- Andrews, H. C.: "Agriculture for High Schools", Gage, 1951.
Deyoe, G. P.: "Getting Acquainted with Agriculture", Interstate, 1948.
U. S. D. A.: "Farmers in a Changing World", 1940 Year Book.
U. S. D. A.: "Science in Farming", 1943 - 1947 Year Book.
Ready, J. C.: "A Manual of Canadian Agriculture", Ryerson, no date.

Animal Production:

- MacEwan G. and Ewan, A. H.: "Canadian Animal Husbandry", Nelson, 1945.
Peters, W. H. and Deyoe, G. P.: "Raising Livestock", McGraw-Hill, 1946

Soil and Conservation:

- U. S. D. A.: "Soils and Men", 1938 Year Book.
Bennets, M. M.: "Elements of Soil Conservation", McGraw Hill, 1947

Farm Crops:

- Martin, J. H. and Leonard, W.-H.: "Principles of Crop Production",
Macmillan, 1949.

Horticulture:

- Refer to Section B of the outline.

Reference Bulletins and Circulars

Publications of the Alberta Department of Agriculture, of the Alberta Department of Public Health, of the University Department of Extension, and of the Canada Department of Agriculture will be available to schools offering the Grade IX option in Agriculture through the Curriculum Branch of the Department of Education. These publications so supplied are to remain the property of the school and are not to be distributed to the pupils. REQUESTS FOR THESE PUBLICATIONS SHOULD BE DIRECTED TO THE CURRICULUM BRANCH, DEPARTMENT OF EDUCATION, EDMONTON, ALBERTA. These publications will be issued in limited quantities, and the teacher should specify the number required; ten copies of any publication will be the maximum supplied by the Department under ordinary circumstances. Teachers will be supplied with current lists of available publications of the above authorities; teachers may also secure lists of available materials from the Extension Department, University of Saskatchewan, the Department of Extension, University of Manitoba and the Information Service, Department of Agriculture, Washington, D. C.

General

1. U. of A., Department of Extension
Cropping for Profit and Permanency, 1950. Bul. No. 44
2. Alberta Department of Agriculture
Farming in Alberta, 1952.
Annual Report of the Minister of Agriculture.
3. Department of Education, School Book Branch
The Story of the Soil, 1951.
4. Dominion Department of Agriculture
Types of Farming in Canada. Pub. No. 825
Canada's Agricultural Resources.
Dominion Experimental Farm Service.
Progress Report of your Local Experimental Station.
5. University of Saskatchewan, Extension Department
Guide to Farm Practices in Saskatchewan, 1951.

Soils and Conservation

1. University of Alberta, Extension Department
Water Erosion in Alberta. Bul. No. 56
Wooded Soils and their Management. Bul. No. 21
Soil Map of Alberta.
2. Alberta Department of Agriculture
Fertilizers in Alberta.
3. Canada Department of Agriculture
Guide to the Selection of Agricultural Soils. Pub. No. 748
Soil Drifting-Control in The Prairie Provinces. Pub. No. 568

4. Miscellaneous

- American Plant Food Council, "Our Land and Its Care."
 Alberta Wheat Pool, "Save Our Soil", 1950.
 Farm Implement Companies -- These publish various circulars which could be of value in the classroom. Consult the various implement dealers.
 Line Elevator Farm Service, "Trash Cover Prevents Soil Erosion."
 Line Elevator Farm Service, "Water Erosion of Soils in Prairie Provinces."
 Saskatchewan Department of Agriculture, "Practical Irrigation for Beginners."

Farm Crops

1. University of Alberta, Extension Department

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| Quality of Alberta Grown Wheat. | Bul. No. 37 |
| Press Bulletin, Department of Plant Science. | Annual |
| Treatment of Seed Grain | Cir. No. 5 |
| Insect Pests of Grain in Alberta. | Bul. No. 24 |
| Legume Inoculation. | Cir. No. 4 |
| Potato Crop in Alberta. | Bul. No. 46 |

2. Alberta Department of Agriculture

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| Varieties of Grain for Alberta (current issue) | |
| Rye in Alberta | Mimeograph |
| Flax Production in Alberta | |
| Hay and Pasture Crops for Alberta. | Cir. No. 63 |
| Grass and Legume Seed Crops in Alberta. | Cir. No. 79 |
| The Weed Problem in Alberta. | Bul. No. 59 |
| Noxious Weeds Act. | |
| Wild Oats in Alberta, Control of | Cir. No. 71 |
| Couch Grass in Alberta, Control of | L. 81 |
| Canada Thistle and Sow Thistle in Alberta, Control of | Cir. No. 76 |
| Weeds Poisonous to Livestock. | |
| Weed Control with 2, 4-D. | Bul. No. 83 |
| Ergot in Seed and Feed. | Mimeograph |
| Weeds (colored plates) | |

3. Canada Department of Agriculture

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| Progress Report of (Local) Farm Experimental Station. | |
| Wheat, Canadian Spring Varieties of | Pub. No. 538 |
| Winter Wheat Varieties and Their Production in Alberta. | Pub. No. 799 |
| Oats in Canada. | |
| Barley in Canada. | |
| Good Seed of Cereals and its Significance. | S. P. 29 |
| Pasture Improvement for Cheaper Production. | S. P. 56 |
| Weeds and Weed Seeds. | Bul. No. 137 |

4. Queen's Printer, Ottawa

- Farm Weeds (Colored Plates) Price \$2.00
 Fodder and Pasture Plants (Colored Plates) Price \$1.00

5. Miscellaneous

- Alberta Wheat Pool, "The Story of Wheat", 1952.
 Barley Improvement Institute, "Barley Varieties for Western Canada".
 Line Elevators Farm Service, "D. D. T. Its use on the Farm".

Line Elevators Farm Service, "Field Crop Insects".
University of Saskatchewan, "Seed Cleaning on the Farm".
University of Saskatchewan, "Plant Diseases in Saskatchewan".
Canada Department of Agriculture, "The Beet Webworm".

Cir. No. 14

Horticulture

Refer to the second section of this course outline.

Animal Production, Poultry and Bees

1. University of Alberta, Extension Department
 - Beef Cattle, Selecting, Fitting and Showing. Cir. No. 22
 - Cattle Finishing in Alberta. Bul. No. 34
 - Dairy Cattle, Care and Feeding of Bul. No. 57
 - Milk and Cream Defects of Farm Origin. Bul. No. 43
 - Sheep Production in Alberta. Bul. No. 52
 - Swine Production in Alberta. Bul. No. 22
 - Press Bulletin, Animal Science Department. Annual
2. Alberta Department of Agriculture
 - Beekeeping for Beginners in Alberta. Bul. No. 35
 - Turkey Raising in Alberta. Bul. No. 1
3. Canada Department of Agriculture
 - Cattle Ranching in Western Canada. Pub. No. 778
 - Feedlot Finishing of Cattle and Sheep in Irrigated Areas of Southern Alberta. Pub. No. 778
 - Warbles, Control of Cattle W.P.S. No. 70
 - Feeding of Horses. Pub. No. 656
 - Canadian Poultry Handbook. Pub. No. 683
 - Conservation of Egg Quality. S. P. 57
4. Miscellaneous
 - University of Saskatchewan, "Breeding and Feeding Beef Cattle".
 - University of Saskatchewan, "Parasites of Livestock". Bul. No. 91

Periodicals

The Conservationist, Division of Conservation Education, Conservation Department,
Albany 1, New York.
The Western Producer, Saskatoon, Saskatchewan.
Canadian Cattlemen, Canadian Cattlemen, 28 Michael Building, Calgary.
The Country Guide, The Country Guide Ltd., 290 Vaughan St., Winnipeg.
Agricultural Institute Review, Grindley Hall, 338 Somerset Street West, Ottawa.
Country Gentleman, Independence Square, Philadelphia, Pennsylvania.
Farm and Ranch Review, Calgary, Alberta
Your Farm (a monthly digest) Service Publication Company, 952 Michigan Avenue,
Chicago, Illinois.
Cornell Rural School Leaflet, Rural Education, New York State Agricultural College,
Ithaca, N. Y.

Publishers

1. McGraw-Hill Company of Canada Limited, 12 Richmond St., Toronto 2, Ontario.
2. National Education Association, 1201, Six Trent St., N.W., Washington 6, D.C.
3. The Canadian Education Association, 206 Huron Street, Toronto, Ontario.
4. W. J. Gage & Co. Limited, 82 Spadina Avenue, Toronto, Ontario.
5. The Interstate Publishing Company, 19-27 North Jackson Street, Danville, Illinois.
6. United States Department of Agriculture, Division of Publications, Office of Information, Washington 25, D.C.
7. Thomas Nelson & Sons Limited, 91 Wellington Street West, Toronto, Ontario.
8. Line Elevator Farm Service, 763 Grain Exchange Building, Winnipeg, Manitoba.
9. Alberta Wheat Pool, Calgary, Alberta.
10. American Plant Food Council, Inc., 910 - 17 St. N. W. Washington 6, D.C.
11. Saskatchewan Department of Agriculture Extension Service, Regina, Saskatchewan.
12. Bailey Improvement Institute, 206 Grain Exchange Building, Winnipeg, Manitoba.
13. The Ryerson Press, 249 Queen Street West, Toronto, Ontario.

Section B -- (Horticulture)

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Reference Books

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- Andrews, H.C.: "Agriculture for High Schools", W. J. Gage & Co., Limited, Toronto, 1951.
- Balch, W.B., Colby, A.S., and Talbert, T.J.: "Horticultural Enterprises", Lippincott, (Longmans Green) 1949.
- Cutting, A.B.: "Canadian Home Gardening the Year 'Round," The Musson Book Company Ltd., Toronto, 1946. (Very good).
- Gardner, V.R.: "Basic Horticulture," The Macmillan Company of Canada, Toronto, 1942. (Essential to teacher).

Vegetable Growing

- Shoemaker, J.S.: "Vegetable Growing," John Wiley and Sons, Inc., New York, 1947.

Indoor Culture and Greenhouse

- Chabot E.: "Greenhouse-Gardening for Everyone," M. Barrows and Company, Inc., New York, 1946. (Very good for Grade IX level of work)
- Bahr, Fritz: "Commercial Floriculture," The A.T. De La Mare Company, Inc., New York, 1941. (Very good)
- Post Kenneth: "Florist Crop Production and Marketing," Orange Judd Publishing Company, Inc., New York, 1949. (Excellent but expensive - \$17.)

Fruit Growing

- Gourlay and Howlett: "Modern Fruit Production," 1941.

Landscaping and Farm Improvement

- Fowley, D.J.: "Garden Flowers in Color," Macmillan, 1950.
- Laurie A, and Ries, V.H.: "Floriculture Fundamentals and Practices," McGraw-Hill, 1942.
- United States Department of Agriculture, "Trees," 1949 Year Book.

Landscape and Farmstead Improvement

1. Alberta Department of Agriculture
 - Farmstead Planning and Beautification Bul. No. 9
 - Budding and Grafting Pub. No. 2
2. Canada Department of Agriculture
 - Annual Flowers for Canadian Gardens Pub. No. 796
 - Herbaceous Perennials for Canadian Gardens Pub. No. 784
 - Ornamental Shrubs and Woody Climbers for Canadian Gardens Pub. No. 713
 - Deciduous Trees and Conifers Pub. No. 599
 - Hedges and Their Use Pub. No. 142
 - Pruning, Thinning and Utilizing Trees Pub. No. 770
 - Planning and Planting Field Shelter-belts Pub. No. 785
 - Lawns, Construction and Care
3. Others
 - Extension Service, University of Wisconsin, "Landscape Your Grounds for Better Living."
 - Daniels, F.P.: "You Can Landscape Your own Home," The Minnetonka Publishing Company, Long Lake, Minnesota. (Price \$1.00) (Very good)
 - C.F. Patterson, "Let Us Have a Good Lawn." Cir. Department of Horticulture, University of Saskatchewan, Saskatoon. (Excellent)

Miscellaneous

1. University of Alberta, Extension Department
 - Insects of the Alberta Farmstead Bul. No. 55
2. Alberta Department of Agriculture
 - Weed Control with 2, 4-D
3. Canada Department of Agriculture
 - Insects of the Flower Garden and Their Control
 - (Obtainable from Queen's Printer only.) (Price 25¢) Bul. No. 99
 - Weeds and Weed Seeds Bul. No. 137
 - Farm Weeds of Canada (Coloured plates)
 - (Obtainable from Queen's Printer.) (Price \$2.00)
 - Simplifying 2, 4-D Pub. No. 807
 - Soils, Guide for the Selection of Agricultural Pub. No. 748

Reference Bulletins and Circulars

General

1. Alberta Department of Agriculture
 - Alberta Horticultural Guide
 - Budding and Grafting Pub. No. 2
2. Canada Department of Agriculture
 - Progress Report, 1934-48, Division of Horticulture, Central Experimental Farms
 - Progress Report of the Local Experimental Station
 - Fruits, Vegetables and Honey Act

Vegetable Growing

1. University of Alberta, Extension Division

Home Vegetable Growing	Bul. No. 50
Potato Crop in Alberta	Bul. No. 46
Celery in Alberta	Bul. No. 35
Treatment of Vegetable Seeds	Cir. No. 26

2. Canada Department of Agriculture

Vegetable Growing	Pub. No. 816
Hot Beds and Cold Frames	Pub. No. 702
Irrigating the Prairie Farm Garden	Pub. No. 657
Home Storage of Fruits and Vegetables, Construction and Operation	Pub. No. 743
Plant Hormones, Some Uses of	Pub. No. 665
Potato Diseases (Illustrated Chart)	

3. Others

Extension Department, University of Saskatchewan,
Saskatoon, Saskatchewan, "Vegetable Gardening in Saskatchewan."

Fruit Growing

1. University of Alberta, Extension Department

Small Fruit Growing in Alberta	Bul. No. 54
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2. Canada Department of Agriculture

Budding and Grafting of Fruit Trees (Illustrated folder)	
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3. University of Saskatchewan, Extension Department

Fruit Gardening in Saskatchewan	Bul. No. 123
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Indoor Plant Culture

1. Canada Department of Agriculture

House Plants	Pub. No. 798
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Newsletters

1. Farm News -- Alberta Department of Agriculture, Extension Service.
2. Information Service, Canada Department of Agriculture.
3. Press-Bulletin -- University of Alberta, Extension Department.
4. Better Crops with Plant Food -- The American Potash Institute, Inc.,
1102 16th Street, N. W., Washington 6, D.C.
5. Naugatuck News Letter -- Naugatuck Chemicals, Elmira, Ontario.

Journals and Periodicals

1. Scientific Agriculture -- Agricultural Institute of Canada, Ottawa.
2. The Flower Grower, Albany 1, New York.
3. Canadian Homes and Gardens, 481 University Avenue, Toronto 2, Ontario.
4. Grower Talks -- Geo. J. Ball, Inc., West Chicago, Illinois.
5. Country Guide, Winnipeg, Manitoba.
6. Cornell Rural School Leaflet, Ithaca, New York: New York State College of Agriculture, Department of Rural Education. (75¢ per annum, four issues annually.)
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